

CORRESPONDENCE

Use of Alcohol Mixed With Energy Drinks and Its Consequences: The Authors Respond

Dear Editor:

A new potentially harmful behavior has gained popularity in the past decade: consuming alcohol mixed with energy drinks (AmED). Experimental and survey research is emerging to understand the etiology, consequences, and potential prevention of this phenomenon. As noted by Khan, our recent article (Patrick et al., 2014) was among the first to examine AmED use longitudinally. Longitudinal data allowed us to document that college students who reported AmED use in the prior month were more likely than nonusers to experience negative alcohol-related consequences in the subsequent 2 years. We previously reported short-term sequelae of AmED use across days, documenting that negative consequences—such as having a hangover, passing out, and having a regretted sexual experience—were more likely on days students consumed alcohol and energy drinks compared with days they consumed only alcohol (Patrick & Maggs, 2014). We appreciate that this exchange draws attention to this important new research area.

In a letter to the editor, Khan (2015, this issue) raises five issues related to our article and to broader research on AmED use. We address each here in turn. First, Khan notes that we did not control for consequences occurring before our measurement of AmED use in our examination of prospective associations between AmED use (in the second year of college) and consequences experienced between that time and the fourth year of college. We chose this strategy because the consequences of interest were largely acute (e.g., having an accident), and the questions were formulated to refer to experiences in the prior 12 months. To conclude that AmED use was associated with an increased risk of accidents, for example, it was important that the accidents occurred after the AmED use. It does remain possible that a person who experiences many accidents could increase his or her AmED use as a result, but we view this as less likely. Nonetheless, the article acknowledges our inability with this design to attribute causal effects to the AmED use, noting that over a longer time span, “causal links between alcohol use, caffeine consumption, and consequences may

be reciprocal or mutually reinforcing; these potential links between caffeine and alcohol dependence require additional research” (Patrick et al., 2014, p. 756).

Second, our article focused on between-person correlates of alcohol-related consequences rather than consequences specific to AmED use. Alcohol-related consequences are the third leading cause of mortality in the United States (Mokdad et al., 2004); thus, identifying persons who are at greatest risk for alcohol-related consequences has strong potential public health impact. Our findings indeed “suggest that assessing AmED use may have clinical utility as a part of screening measures to detect risk for future alcohol problems” (Patrick et al., 2014, p. 756). However, we also agree that greater specificity of consequences resulting from caffeine, alcohol, and their co-ingestion would advance research on AmED use. A more precise way to examine consequences of substance use on given occasions is to use repeated-measures designs that contrast experiences of the same person across different occasions. For example, in our previous work using daily-level data, we found that on drinking days when people consumed energy drinks, they drank a greater number of alcoholic drinks, reached higher estimated blood alcohol concentrations, and reported more negative consequences of drinking that day compared with drinking days during which they consumed no energy drinks (Patrick & Maggs, 2014). One advantage of using daily-level data to compare alcohol-only days to alcohol-with-energy-drink days is that it does not require individuals to retrospectively report whether their consequences were a result of alcohol use alone or with energy drinks, which may in fact be difficult (if not impossible) to self-report.

Third, we used a single indicator of AmED use in the second year of college. As stated above, by design we chose to separate the measurement of the AmED use and the consequences so that temporal ordering—AmED use occurring before consequences—was clearly established.

Fourth, Khan suggests that we neglected to control for identified risk factors. We did draw attention to potential unmeasured third variables in the discussion, stating that “observed links may reflect pre-existing differences among

people It is possible that the increased likelihood of negative outcomes results, at least in part, from tendencies for risk taking or other third variables” (Patrick et al., 2014, p. 756). We could not include all potential third variables as controls in the analyses presented, but we suggested that future research build on our work by including additional risk factors. As we previously stated, “Questions about underlying mechanisms, which should be addressed in future studies, are important because distinct causes or processes linking AmED use and subsequent problems might have distinct implications for policy” (Patrick et al., 2014, p. 756).

Last, there is a need for standardized measures of AmED use, as for alcohol more generally (National Institute on Alcohol Abuse and Alcoholism, 2004). We agree that this is a challenge to the field and raises key issues. At a minimum, before standardized self-report measures can be developed, improved product labeling regarding the caffeine and other contents of beverages is necessary so that consumers who choose to do so can obtain accurate information about their energy drink consumption. Furthermore, challenges regarding alcohol measurement, in general, also apply to the measurement of AmED use. For example, both sober and intoxicated drinkers may have difficulty remembering or mentally aggregating the number of drinks they consumed, products are often served in nonstandard sizes (e.g., more than one standard drink per glass), and contents of beverages are often unclear (e.g., mixed drinks contain different amounts of alcohol and caffeine depending on who prepares the drink).

As previously mentioned (Patrick et al., 2014), there are several important ways to advance AmED research. Future research should carefully examine additional predictors and consequences of AmED use, the sequences of initiation of AmED use with other substances, expectancies surrounding AmED use, and risk perceptions of these beverages. As gathering experimental and survey evidence continues to

point to the potential public health costs of AmED use, additional research in this area is clearly necessary.

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